REMARKS

This paper is presented in response to the non-final official action dated July 22, 2009, wherein: **(a)** claims 1-4 and 6-30 are pending, **(b)** claims 19-30 were withdrawn from consideration, **(c)** claims 1-4, 6, 7, and 9-18 were rejected as being obvious over Joo in view of Hofmann and Fayed, **(d)** claim 8 was rejected as being obvious over Joo in view of Hofmann and Fayed, in further view of McClelland, **(e)** claims 1, 3, 4, 6, 9-13, and 15-18 were rejected as being obvious over Joo in view of Hirsch, **(f)** claim 2 was rejected as being obvious over Joo in view of Hirsch, and further in view of Fayed, **(g)** claim 8 was rejected as being obvious over Joo in view of Hirsch, and further in view of McClelland, and **(h)** claims 7 and 14 were rejected as being obvious over Joo in view of Hirsch, and further in view of Hofmann.

Reconsideration and withdrawal of the rejections based on the following remarks are respectfully requested.

The issues raised in the outstanding action are addressed below in the order in which they appear in the action.

Claim Rejections Under 35 U.S.C. § 103 over Joo in View of One or More of Hofmann, Fayed, and McClelland

The rejection of claims 1-4 and 6-18 as being obvious over Joo in view of Hofmann and Fayed together or further in view of McClelland are respectfully traversed; reconsideration is requested.

Independent claims 1 and 9 recite a method for manufacturing molten iron including roll-pressing reduced material through at least one pair of roller presses to produce a continuous compacted material having lumped portions adjacent to each other and concave grooves formed therebetween on the pressed surfaces. The method further includes forming the protruded portions and the concave grooves continuously on the pressed surfaces along an axial direction of the one pair of roller presses, where the pressed surfaces include first and second pressed surfaces opposing each other and the lumped portions include first and second lumped

portions formed on the first and second surfaces, respectively. The method also includes partially overlapping first and second lumped portions.

The grooves on the roller presses are non-aligned to produce compacted material as recited in claims 1 and 9 and as shown, for example, in Fig. 1 of the application, below. In claims 1 and 9, the compacted material is formed such that lumped portions on both sides partially overlap. *See*, for example, Fig. 1 of the application, below. Dependent claims 2-4, 6-8, and 10-18 recite additional features of the methods of claims 1 and 9, respectively.

Joo discloses an apparatus and method for manufacturing molten pig iron with fine iron ore in multiple fluidized beds. Joo further discloses a briquetting device, which forms reduced iron briquettes. Joo fails to disclose forming compacted material in the shape recited in the pending claims.

Hofmann discloses an apparatus for forming briquettes, as shown in Fig. 2, below. However, Hofmann fails to disclose a method for manufacturing molten iron ore or compacted material in a shape as recited in the pending claims. Specifically, Hofmann fails to disclose 1) forming continuous compacted material having lumped portions adjacent to each other and concave grooves formed between the lumped portions, 2) lumped portions that are continuously formed on the pressed surfaces along and axial direction of one pair of roller presses, and 3) first and second lumped portion that partially overlap each other, as recited in the pending claims. *Compare*, for example, Fig. 3 of Hofmann and Fig. 3 of the application, below.

As recited in the claims, the concave grooves are formed between the lumped portions on pressed surfaces. *See*, for example, Fig. 3 and 500d in Fig. 1 of the application. In contrast, the lumped portions of Hofmann are separated by flat portions and not by concave grooves. *See* Fig. 3 (space between briquettes 30) of Hofmann. Therefore, Hofmann fails to disclose concave grooves formed between the lumped portions, as recited in the claims.

As further recited in the claims, the compacted material is formed so that the lumped portions are continuously formed on the pressed surfaces along an axial direction of one pair of roller presses (for example, Fig. 3 and k in Fig. 1 of the application). The lumps of Hofmann are horizontally (in the axial direction) discontinuous across a surface of the material, where the lumps on one side (denoted by solid lines) are separated by flat portions (denoted by 31 and dotted lines). *See* Fig. 3 of Hofmann. Thus, the lumps of Hofmann are separated by flat portions and are not continuously formed on a pressed surface along an axial direction, as recited in the claims.

The action cites Fig. 4 of Hofmann as showing that the first and second lumped portions partially overlap. However, the briquettes formed in Hofmann do not partially overlap one another. Fig. 4 of Hofmann merely shows the briquette sheet of Fig. 3 of Hofmann in profile. It appears that the briquettes partially overlap when the briquette sheet is in profile; however, Fig. 3 of Hofmann shows that the briquettes are vertically adjacent to those on one side of the sheet and horizontally adjacent to those on the other side of the sheet. The briquettes are not overlapping, and this difference is lost in profile. Comparing the briquette sheet of Hofmann (Fig. 3 of Hofmann) with the compacted material of the present application in partial profile (Fig. 3 of the application) illustrates the differences in the shape of the material. These differences are also exemplified in Fig. 1 of Hofmann where the briquettes 30 are individual units, flat on one surface and lumped on the other, lacking overlapping first and second lumped portions. Furthermore, Hofmann is directed to forming individual briquettes. Hofmann at col. 1, lines 35-37. Overlapping lumped portions would render the method in Hofmann unsatisfactory for its intended purpose of forming individual briquettes because there would be no clearly defined briquettes separated by webbing. Thus, Hofmann fails to disclose first and second lumped portions that partially overlap each other, as recited in the claims.

Part of Figure 1 of Hofmann

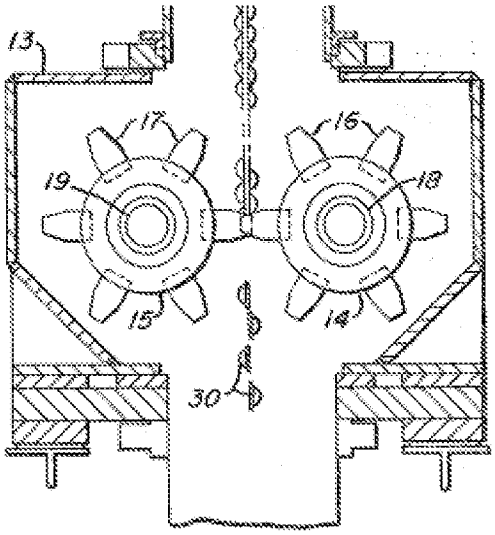


Figure 4 of Hofmann

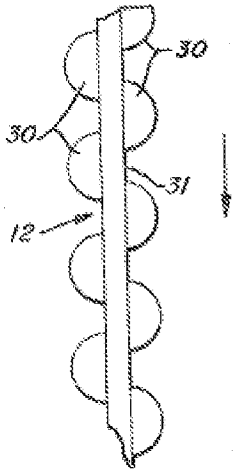


Figure 1 of the application

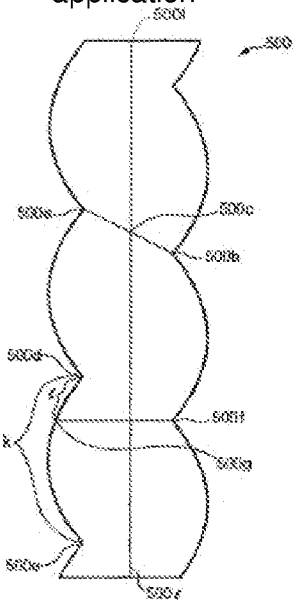
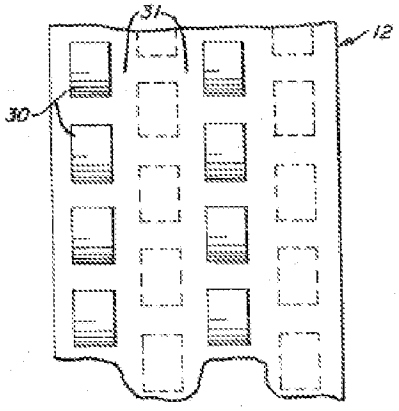
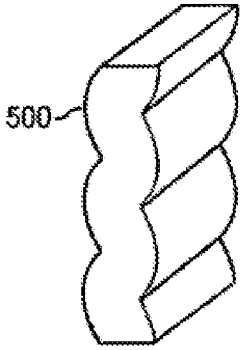


Figure 3 of Hofmann



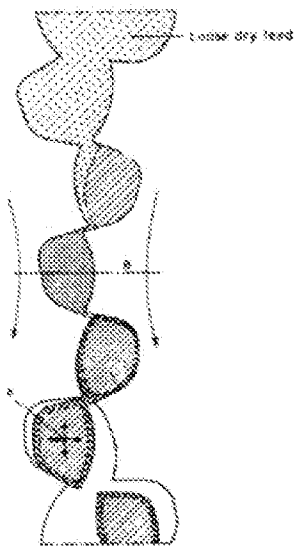
Part of Figure 3 of the application



In addition, Hofmann fails to provide a motivation to change the shape of the D-shaped briquettes in Hofmann because the briquette sheet is meant to easily break apart and separate into individual briquettes. *See* Hofmann at col. 2, lines 12-16. For example, in Fig. 1 of Hofmann, the material is formed and separated into individual briquettes 30. In contrast, the shape of the compacted material of the pending claims prevents breaking or splitting of the compacted material. *See* the present application at page 24, lines 1-3.

Fayed discloses general roll-pressing techniques, including briquetting. Fayed discloses briquettes, as shown in Fig. 6.188 of Fayed, below. However, Fayed similarly fails to disclose the shape of the compacted material recited in the pending claims. The briquettes of Fayed do not have first and second lumped portions that partially overlap each other, as recited in the pending claims. Similar to Hofmann, the material of Fayed is meant to easily break apart and separate into individual briquettes. *See* Fayed at page 345. In contrast, the shape of the compacted material of the pending claims prevents breaking or splitting of the compacted material prior to crushing. *See* the application at page 24, lines 1-3. The compacted material is subsequently crushed and charged to a melter-gasifier.

Figure 6.188 of Fayed



Joo, Hofmann, and Fayed fail to teach the shape of the compacted material as recited in the pending claims; instead the references disclose and suggest briquettes. The compacted material of the present application is not a briquette. Briquettes are formed when "rows of identical pockets are machined into the working surface and the rollers are timed such that the pocket halves exactly match." *See* Fayed at 345. In contrast, the compacted material of the amended claims is not formed as briquettes, as shown in Fig. 1 of the application, above. Therefore, the combined references fail to teach the shape of the compacted material as recited in

the claims. In addition, there is no reason to modify the briquettes of Hofmann and Fayed to form the shape of the compacted material of the pending claims.

Similarly, McClellan teaches briquetting and fails to teach the shape of the compacted material recited in the pending claims. Therefore, McClellan also fails to provide the motivation to alter the shape of the briquettes of Hofmann and Fayed.

In addition, Joo, Hofmann, and Fayed fail to teach or suggest the advantages associated with the shape of the compacted material. For example, briquettes (similar to those in Hofmann and Fayed), in the third comparative example, broke along the grooves and split lengthwise, as shown in Table 1 and p. 22, lines 14-17 of the present application. In contrast, the compacted material of the claims did not split or break before entering the crusher, and additionally demonstrated improved productivity and minimal powder generation. The cited references fail to teach or suggest the advantages associated with the shape of the compacted material recited in the pending claims.

Claim Rejections Under 35 U.S.C. § 103 over Joo and Hirsch in View of One of Hofmann, Fayed, and McClelland

The rejections of claims 1-4, 6-15, and 18 based on Hirsch are traversed because Hirsch is not prior art with respect to the rejected claims. Hirsch was published in Australia on June 12, 2003 (prior to the December 19, 2003, international filing date of the present applicaiton and subsequent to the December 21 and 28, 2002, Korean priority dates of the present application). Enclosed as Exhibit A is a verified English translation of portions of Korean application no. 10-2002-0085858 filed December 28, 2002, demonstrating priority of rejected claims 1-4, 6-15, and 18 to December 28, 2002. The December 28, 2002, priority date of Korean application no. 10-2002-0085858 is prior to the publication date of Hirsch, and therefore, Hirsch is not available as prior art under 35 U.S.C. § 102. Therefore, all the rejections based on Hirsch should be withdrawn. Such action is respectfully requested.

CONCLUSION

In view of the foregoing amendments and remarks, the pending application is in condition for allowance, and such action is solicited.

Should the examiner wish to discuss the foregoing or any matter of form in an effort to advance this application toward allowance, he is urged to telephone the undersigned at the indicated number.

January 21, 2010

Respectfully submitted,

By /Pooja A. Van Dyck #64,806/

Pooja Van Dyck
Registration No.: 64,806
MARSHALL, GERSTEIN & BORUN LLP
6300 Willis Tower
233 South Wacker Drive
Chicago, Illinois 60606-6357
(312) 474-6300
Attorney for Applicant